Report for 2004CT45B: Investigating the Influence of Purging on Long-Term Remediation Compliance Monitoring

- Conference Proceedings:
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Report Follows

Problem and Research Objectives

Monitoring wells are commonly used for remediation compliance monitoring across the Country. The objective of this study is to determine if monitoring wells should be purged when conducting groundwater monitoring. The study will provide information to regulatory agencies and the environmental consulting industry that can be used to develop sound sampling guidance and improve compliance monitoring at ground water contamination sites.

Methodology

The research site is the Motor Pool at the University of Connecticut in Storrs, Connecticut. The Motor Pool is the refueling station for the University, and the location of previous gasoline and diesel fuel spills. A near field monitoring well was sampled three different ways, during nine sampling rounds to develop data for conducting a statistical comparison on water quality parameters. We also profiled the water quality in the well before and after sampling. Water quality data was also compared to that derived from an adjacent multilevel sampling cluster. This permitted examining how the water quality derived from wells compares with formation water quality and to model concentration averaging in the well.

Principal Findings and Significance

The research is still on-going. Our preliminary findings are as follows:

- The undisturbed concentration distribution in the well bore does not mimic the formation vertical concentration distribution. This implies that the characterization of the vertical concentration distribution of a formation by taking grab or passive (e.g., diffusion bag samplers) samples in a shallow monitoring well will be highly inaccurate.
- None of the common sampling methods provide samples that are representative of formation concentrations as would be predicted by concentration averaging.
- Statistical analysis indicated the three sampling methods tested provide similar results for inorganic constituents and MTBE.
- The first sample taken from a well, irrespective of method, provides the highest concentration.
- The curtailment of MTBE in gasoline can eliminate the contamination of ground water by gasoline vapor releases. MTBE levels were monitored during this study shortly after it was banned in Connecticut gasoline. Levels continually declined throughout the monitoring period from over 1000 ppb to near non-detections.